REMARKS

Claims 27-55 are pending in the present application. Reconsideration is respectfully requested in view of the following comments and the amendments above.

Prior to specifically addressing the issues brought to bear by the Examiner, Applicants would like to briefly discuss the present invention. The present invention relates to a polypeptide molecule that contains at least ten consecutive amino acids of the amino acid sequence in SEQ ID NO: 3 but does not contain all or part of one or more of the polypeptides of SEQ ID NOs. 10 to 15, which polypeptide sequences were known in the prior art, since they were described in WO 92/13884 as set forth at least on page 5 of the above-captioned application.. Therefore, Applicants have excluded those known sequences from the claims.

Claims 27 to 29, 35, 39, 43, 44 and 48 have been rejected under 35 U.S.C. §112, first paragraph, as lacking enablement. For the following reasons, however, this rejection is respectfully traversed.

In rendering this rejection, the Examiner purports that the Examples are drawn to those peptides which are excluded from the claims. Applicants respectfully disagree with the Examiner for the following reasons.

First of all the it should be clear from the Examples in the specification that not only the excluded peptides were tested, but recombinantly produced LSA-3 peptides, also. These peptides abbreviated GST-729, GST-NN and GST3PC collectively are described at least on page 21 of the specification and cover 95% of the LSA-3 molecule. These recombinant proteins were injected into mice as demonstrated in Example 6 and the recombinant GST-3PC was shown to react very strongly in immunofluorescence with Plasmodium falciparum

sporozoites. In Example 8, the chimpanzee Gerda was also boosted with the recombinant DG729.

Thus, Applicants submit that not all of the Examples in the specification are directed towards the excluded peptides.

Applicants **enclose herewith** Annex I which is a summary of a study using the LSA-3 antigen as a malaria vaccine. Different amino acid sequences of the LSA-3 protein were chemically synthesized and tested for their immunogenicity in mice. The Examiner's attention is directed to the fact that the various sequences that were tested and were immunogenic are not solely those sequences which were excluded from the claims.

Furthermore, the Examiner deems that SEQ ID NO: 11 is not found in Figure 2 and hence would not be able to practice the invention since one would not be able to exclude that which does not exist. Applicants respectfully submit that SEQ ID NO: 11 is clearly identified by its sequence, which is known in the prior art as 729S as evidenced by Figure 3 in U.S. Patent No. 6,319,502. Therefore, a person skilled in the art can easily identify this known sequence and exclude it and, as such, Claim 27 is enabled within the context of 35 U.S.C. §112, first paragraph.

In view of the foregoing, withdrawal of this rejection is respectfully requested.

The rejection of Claims 27 to 29 under 35 U.S.C. § 102 (b) over Barnes et al is traversed.

Applicants note that Barnes et al was published in August 1995 whereas this application claims priority to French application 95/07007 filed on June 13, 1995. Applicants note that a certified English translation of this French application was filed in the parent application (US 08/973,462). Accordingly, the Examiner's rejection is not proper.

Nonetheless, Applicants **enclose herewith** another copy of the certified English translation of the French priority document. Accordingly, Applicants submit that Barnes et al should not be prior art and this ground of rejection should be withdrawn.

Acknowledgment of withdrawal of this rejection is respectfully requested.

The rejection of Claims 27-29, 35, 39 and 43 under 35 U.S.C. § 102 (f), is respectfully traversed.

In rendering this rejection, the Examiner deems that since U.S. Patent Nos. 6,319,502 B1 and 6,270,771 have different inventors than the presently claimed invention and describe similar subject matter, the presently claimed inventors did not contribute to the above-captioned invention. Applicants disagree with the Examiner's conclusions for the following reasons.

It should be noted that Pierre Druihle is a common inventor for both the U.S. issued patents and the present invention. Furthermore, U.S. Patent Nos. 6,270,771 B1 and 6,319,502 do not disclose the entire LSA-3 sequence, which is the subject of the present application. Moreover, the partial LSA-3 sequence disclosed in these issued patents is furthermore excluded from the claims.

Therefore, Applicants submit that the presently claimed inventors contributed in obtaining the full length LSA-3 protein and therefore withdrawal of this rejection is respectfully requested.

The rejections of (a) Claims 27-29, 35, 39 and 43 under 35 U.S.C. § 102 (b) over Guerin-Marchand et al (WO92/13884) in the light of the translation provided in U.S. Patent No. 6,270,771, and (b) Claims 27-29, 35, 39 and 43 under 35 U.S.C. § 102 (e) over Guerin-Marchand (U.S. Patent No. 6,319,502) are respectfully traversed.

As stated above, the presently claimed invention excludes all or part of the 729S sequence, which is described in the patents of Guerin-Marchand et al. Therefore, in view of the amendment to the claims, Applicants submit that the presently claimed invention is novel over the patents of Guerin-Marchand et al and withdrawal of these grounds of rejection are respectfully requested.

The rejection of Claims 27-29, 35, 39, 43, 44 and 48 under 35 U.S.C. §112, second paragraph, is obviated by amendment.

Applicants have amended the claims to be free of the Examiner's criticisms. More specifically, Claim 27 has been amended to clarify that all or part of one or more polypeptides are excluded and Markush language has been inserted into this claim; proper antecedent basis appears in claim 35 and the terminology "if possible" and "more especially" has been deleted from this claim; Claims 39, 43, 44 and 48 have been amended to reflect the proper antecedent basis and Markush language has been inserted in Claims 44 and 48.

In view of the amendments herein, withdrawal of this rejection is respectfully requested.

The rejection of Claims 27-29 under 35 U.S.C. §101 is obviated by amendment. Applicants have amended the claims to recite "isolated" so as to specifically indicate the involvement of the "hand of man." Accordingly, this ground of rejection is no longer believed to be tenable.

Withdrawal of this ground of rejection is requested.

Applicants submit herewith corrected drawings in accordance with the Examiner's request for the same. This objection is believed to be obviated and acknowledgment to this effect is requested.

The objection to the amendment filed on February 4, 2002 under 35 U.S.C. §132 as introducing new matter is obviated by submission of the enclosed substitute Sequence Listing.

Applicants **submit herewith** a substitute Sequence Listing and a corresponding computer-readable Sequence Listing. The sequence information recorded in the corresponding computer-readable Sequence Listing is identical to the paper copy of the substitute Sequence Listing. Support for all of the sequences listed in the substitute Sequence Listing is found in the present application. No new matter is believed to have been introduced by the submission of the substitute Sequence Listing and the corresponding computer-readable Sequence Listing.

Withdrawal of this ground of objection is requested.

Finally, Applicants remind the Examiner that MPEP §821.04 states:

> ...if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of the allowable product claim *will be rejoined.* (emphasis added)

Accordingly, should the elected invention be found allowable, Applicants request that withdrawn process claims be rejoined and examined.

Applicants submit that the application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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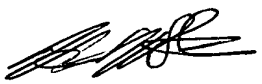
Norman F. Oblon



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Swiss Participation in European Research Programmes Annex I

EU-Programme :	**INCO**
Project-Title :	**MPES vaccine : Selection of *P. falciparum* genes for MP development**
Keywords :	Malaria; liver stages; peptides; vaccines
Beneficiary :	Giampietro Corradin (gianpietro.corradin@unil.ch)
Organisation / Company :	Université de Lausanne Institut de Biochimie Ch. des Boveresses 155 1066 Epalinges, Switzerland
Project Duration :	01.11.1998 - 29.02.2000
Contribution BBW/OFES :	CHF 132'835.--
Project-Number :	BBW 96.0377a
Project Partners :	Coordinator: Institut Pasteur, Paris (F)

Abstract

Chemical synthesis of overlapping long synthetic peptides (LSP) corresponding to the *Plasmodium falciparum* exo-erythrocytic protein LSA-3 comprising 1786 amino acids has been completed. These LSP which range from 44 to 186 aa have now been tested for their immunogenicity in mice and antigenicity in humans. Using the 17 LSA3 LSP we performed a mapping of B cell epitopes in sera from 20 villagers living in Dielmo, an African hyper-endemic malaria region. Each of the peptides was recognised by at least one individual, and many by most individuals. The LSP strategy led us to identify several antigenically dominant regions. A first, highly antigenic region, lies within the R2 repeats region since almost all of the individuals recognised the three peptides covering the sequence 501-854. This region includes repeats of octamers, which vary in numbers but are highly conserved among various parasite strains. In addition, in the NR-B region represented by 8 polypeptides, the prevalence of responders is also high, despite the fact that it is a non-repetitive region, and, in fact, the response for the 3 peptides is as high as that observed for the repeat region . In the NR-A from N-terminal region, sequence 100-222 is also recognized by antibodies as previously observed with smaller peptides. Many of the peptides proved to be immunogenic in mice as evaluated by the proliferative or IFN-γ response and by the antibody production. The frequency of specific IFN-γ producing cells were measured by *ex-vivo* Elispot on freshly isolated LN cells from each immunised mouse. Epitopes can be classified in three different categories as follows: a) sequences 1081 to 1255 and 1601-1712 corresponding to three peptides induced both proliferative response and IFN-γ production in most of the mice, b) sequences 893-999 and 1698 to 1786 induced moderate to high proliferative response; however, only one mouse per group produced significant levels of IFN-γ against the homologous peptide, and c) for sequences 840-907, 985 to 1095 and 1241 to 1517, T-cell responses were poor; a few mice (one or two per group) showed a proliferative response in the absence of IFN-γ production.

In conclusion, results show a strong and rather homogeneous antibody response against each of the 17 LSP studied. All peptides proved to define at least one B cell epitope in Balb/C mice and many were capable of inducing high levels of antibodies and T cell responses.